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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

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REPLY TO: 3430 FIDM Biological Evaluation July 17, 1979

SUBJECT: Update -- Proposed Sugarloaf Salvage of Trees Killed by Bark Beetles, Bald Rock (Rare II Area No. 5169) and Middle Fork of the Feather River (Rare II Area No. 5167), Plumas National Forest

TO: Forest Supervisor, Plumas NF

INTRODUCTION

This is the third in a series of observations made of the tree mortality on the LaPorte District. The first of these was made in December, 1977 when the tree mortality caused by drought alone was far in excess of that mortality resulting from a combination of drought and insect attack. An increase in beetle numbers was predicted along with a projection that populations might persist beyond the drought and kill trees recovering from the stress induced by the drought. Indeed this did occur.

The second evaluation in May, 1979 was on target in noting that the main concentration of tree mortality had shifted from the South Fork drainage to that of the Middle Fork. An aggressive salvage effort occurred in the South Fork and no doubt a portion of the beetle population was removed in this operation. Those remaining apparently found the forest more resistant to infestation because of improved moisture conditions and the absence of the weaker trees that had already succumbed to attack. The forest of the South Fork now appears to be well past any serious problem with tree mortality caused by the recent combination of drought and insects.

The current evaluation occurred on Friday, July 6 when J. Wm. Dale, Entomologist, and Doug Guthormsen, Small Sales Officer, LaPorte District made an aerial reconnaissance of the Bald Rock and Middle Fork roadless areas to evaluate the current status and trend in tree mortality. On-the-ground observations were made on the LaPorte District of similar, more accessible mortality to ascertain the bark beetles involved and the extent and nature of the damage to the trees being salvaged on unconstrained areas.

OBSERVATIONS

Tree mortality currently is caused by mountain pine beetle (Dendroctonus ponderosae), red turpentine beetle (D. valens), pine engravers (Ips spp.), flatheaded borers (primarily Melanophila spp.), fir engraver (Scolytus ventralis) and western pine beetle (D. brevicomis). The latter four primarily are in or near the crown area of the trees while the mountain pine beetle is distributed lower on the bole. The height of attack above the soil line by turpentine beetle indicates that some trees are still in a weakened condition and attack by this beetle may be predisposing trees to further attacks by other insects. These patterns of attack are not unusual and are currently found in two other areas of California

where bark beetles remain active as a result of the aftereffects of the recent drought -- the south-facing slopes of the Rubicon and Stanislaus River Valleys.

Aerial observations indicated that tree mortality in the vicinity of Seven Falls has greatly declined. North-facing slopes look particularly free of beetle activity. However, there is some activity on south-facing slopes where fading trees indicate that a low level of activity is moving up over the lip of the canyon and out of the steeper slopes.

In the area of Marble Cone one north-facing slope may be developing an increase in mortality from a fairly low level. In general, north-facing slopes in this vicinity appear to be rapidly recovering from the effects of the drought and tree loss is rapidly declining. South-facing slopes exhibit many large trees with spike tops. This indicates recent poor vigor and susceptibility to bark beetle attack. The number of older dead sugar pine indicate that losses have been occurring for some time, perhaps even before the drought. Similarly, current losses on south-facing slopes in Onion Creeek Valley seem to be a part of a continuing process.

Three mortality locations of particular interest were Cleghorn Bar (T23N, R9E, Secs. 31 & 32), Crescent Hill (T23N, R9E, Secs. 11-14) and Pigeon Roost Creek. Losses in these areas are characterized by old large, flat-topped sugar pine. At Cleghorn Bar the number of old snags in the area indicate past insect activity and it appears that further losses can be expected. Volume loss will be high because of the large size of the trees dying and dead. The infestation and associated tree loss at Crescent Hill appears to be moving upslope out of the canyon and over the lip of the south-facing slope. Some of the mortality may fall outside the Middle Fork boundary.

Ridges in the vicinity of Bear Creek exhibit new faders and current beetle activity also exists in the area of the Little California Mine and on the flat near the footbridge at Hartman Bar.

In the vicinity of Little Marble Cone there appears to be more beetle activity than up river and this activity has coalesced into some defined spots. Groups of recent faders and older kills can be seen along ridges from Little Marble Cone to Sky High.

Downstream from Sky High is a canyon where a number of trees have died and a few new faders indicate continuing beetle activity although most of the highly susceptible trees probably have already died. Further downstream on the Oroville District and into mixed ownership, a number of active centers of mortality exist. Similar indications of activity occur on the Oroville side west of Feather Falls. Heavy mortality can be seen on State and private land between the South Fork and Middle Fork arms of Lake Oroville.

Finally, the Feather Falls Trail passes through spots of mortality, some of which are the earliest beetle-killed centers during the recent surge in beetle activity. Fading trees indicate that some mortality still occurs

near the Feather Falls Viewpoint. It is not known if other trails pass through similar mortality centers.

DISCUSSION

It is not unusual for beetle activity to persist beyond a drought and for mortality to occur in trees recovering from the stress of moisture deficiency even though the peak of mortality has passed. This is particularly true of sites that may be marginal, such as some ridges and south-facing slopes. The LaPorte and Oroville Districts were particularly susceptible because of the number of such sites along the canyons and valleys and the precipitous decline in moisture in an area normally accustomed to high precipitation levels. These levels allow stocking to develop well beyond advisable carrying capacity, and prolonged drought provides abundant food supply for bark beetles when these "extra" trees weaken and die from lack of soil moisture.

Aerial reconnaissance of the Middle Fork drainage revealed that tree mortality on north-facing slopes has declined to the range of what one might expect annually on an actuarial basis. Thus, recovery of the trees from the effects of the drought is assumed to be complete on these slopes. However, on some flats, south-facing slopes and ridges tree mortality continues, albeit at declining levels from the numbers killed in 1977 and 1978. These reduced numbers, though, reflect quite a loss in volume, as many of those now dying are large sugar pine of significant volume per tree.

The current distribution of old and new mortality in the sugar pine indicate a sustained level of activity by Ips, flatheaded borers and probably turpentine beetle. The prevalence of blister rust in these stands contributes significantly to the presence of weakened and dying trees, limbs and tops which these insects need to maintain a troublesome population. To this situation the drought added the increased activity of the mountain pine beetle. Furthermore, mortality in sugar pine throughout the Sierra has indicated its inability to recover from the effects of the drought as quickly as other tree species. Thus, salvage of sugar pine should be concerned about proper handling of slash to prevent the buildup of additional numbers of Ips and flatheaded borers and related tree decline and mortality.

The proposed salvage is to be a winter operation. Salvage during winter has the disadvantage of increased difficulty in locating infested trees if they have not been previously marked during the autumn. Crowns will not have faded and wet bark, common in this high precipitation area, makes it difficult to spot other signs of insect attack located high in the trees. One almost is limited to the bark flaking that accompanies predation of beetle broods by woodpeckers and in these trees much of the brood may well be destroyed. Thus, it becomes difficult to influence beetle numbers even in localized infestations without an intensive input of personnel and time in the cruising of infested areas. Removing dead trees from which beetles have flown does nothing toward reducing further losses caused by bark beetles. The result is reclamation of wood fiber otherwise eventually lost to the deteriorating agents of insects, fungi and weather.

Salvage of large sugar pine can be delayed until the crowns fade as these trees retain their economic value over several years and many of those already dead retain a large volume of sound wood. However, many of the ponderosa pine and true firs are of smaller size than the sugar pine and delay in salvage could result in the loss of considerable economic value as these species deteriorate more rapidly than the large sugar pine. Their greater numbers also contribute more to the fuel loading of the drainage. This could be significant to the future well-being of the drainage in view of the increased use of the area by recreationists and the development of nearby private lands.

Deferred or absence of salvage will not pose a bark beetle threat to the adjoining unconstrained areas, for a number of trees on marginal sites within the constrained area are more apt to be under more stress, and thus more susceptible, than trees of surrounding Federal lands where salvage has occurred or where the sites are of higher quality. The reverse might well be more likely as much of the more intensive beetle activity is located on State and private lands and the roadless area may prove a "sink" that absorbs beetles moving out of these non-federal lands.

The dead trees near the Feather Falls Trail present a special management problem. These trees will eventually pose a hazard to the many hikers who visit Feather Falls Viewpoint. It is not unreasonable to expect that hikers nearing their destination would be inclined to shortcut the trail when near their destination. Thus, removal of trees within one tree-length from the trail may not be sufficient should indications exist of frequent off-the-trail travel. This might be particularly true during periods when trees are most likely to fall and the hikers most likely to shortcut -- a rise in the wind signaling the approach of a storm.

MANAGEMENT OPTIONS

The Wild and Scenic River Area is not part of any option and any possible action within the roadless areas should not be construed to include the Wild and Scenic land area. No risk marking will take place if any of the options 2 through 5 are selected.

1) Take no action. Tree loss in ponderosa pine and fir will continue to decline and probably will reach normal levels in 1980 if precipitation is near or above normal. The nature of current losses in sugar pine indicate that continued mortality will occur into 1980. Fuel loads will increase, considerable timber values will be lost, trailside hazard trees will remain.

2) Fell and leave hazard trees along Feather Falls Trail and other trails impacted by tree mortality. Recreationists will be protected from undue risk and the legal standard of the reasonable man will be met. Fuel loads in critical areas will not be reduced, timber values will be lost, visual quality of the trails will decrease for a few years.

3) Hazard tree removal along Feather Falls Trail and other trails impacted by tree mortality. Recreationists will be protected from undue risk and the legal standard of the reasonable man will be met. Fuel loads in critical areas will be reduced, some timber value will be realized, visual quality will not be as impacted as in #2 if cleanup is good, and some killed trees can be left for educational purposes.

4) Helicopter salvage of trees infested and killed in all of Bald Rock Area and the Middle Fork Area upriver to Little Bear Creek. Since most of the mortality exists in this area, much of the timber value will be realized and those areas with the greatest increase in fuel loading will get relief. Trailside hazards will be removed. High timber values of the large sugar pine in the remainder of the Middle Fork Area will not be realized.

5) Helicopter salvage of trees infested and killed in all of Bald Rock and Middle Fork Areas. The high timber values found in the dying and dead sugar pine of upriver areas will be obtained along with that of downriver areas. Trailside hazards will be removed and the greatest extent of fuel load reduction will occur.

WILFRED L. FREEMAN, JR.

WILFRED L. FREEMAN, JR., Director
Forest Insect and Disease Management

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5230 Evaluation December 12, ...

Insect Evaluation (DR 147/77)

Forest Supervisor, Plumas N.F.

Dick Castaldini requested a field evaluation of tree mortality occurring in the roadless area at Feather Falls. An inspection of the area was made by John Pierce, accompanied by Castaldini, Paul Linback and Steve Stine on December 6, 1977.

Tree mortality in this area is similar and is part of the massive die off of ponderosa pine in the foothills around Lake Oroville. In this inspection, most of the dead and dying trees inspected were not infested with primary insects. However, some of the trees inspected were occupied by the western pine beetle this summer and are now abandoned or are currently infested with over-wintering broods. But at this time, it is difficult to substantiate that any trees are being killed by beetles since so many trees apparently are dying from the effects of drought alone. The beetles are probably living in trees which would die anyway.

Our expectations are that beetle populations will expand rapidly, encouraged by the abundant food supply. When most dying trees contain beetles, a condition will be reached where beetles may attack trees which otherwise would survive the drought. Large beetle populations may also persist beyond the drought and kill trees recovering from the stress of the current moisture deficiency.

Pest control benefits of proposed salvage efforts are primarily aimed at removing dying trees, which are excellent food sources for the beetles, as rapidly as they can be recognized. In the salvage process, those trees containing beetles will also be removed. Thus, salvage could reduce substantially the eventual size of both the beetle food supply and beetle populations. The effectiveness of salvage in avoiding the anticipated western pine beetle epidemic will depend upon how thoroughly and how timely it is accomplished.

Unfortunately, the size of the current salvage job is massive and accomplishing it completely in a limit time will be difficult. That portion of the problem limited to the Feather Falls roadless area appears to be a minor portion of the overall problem. However, if the salvage job was thoroughly done elsewhere and not in the roadless area, the possibility of the untreated roadless area becoming a source for reinfesting outside areas should be considered.

A more detailed survey - with the aid of new aerial photos just ordered - could provide more specific information about the relative position of the roadless area within the larger problem area.

WILFRED L. FREEMAN, JR., Director
Forest Insect and Disease Management

Enclosure.

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REPLY TO: 3430 FIDM Evaluation

June 14, 1979

SUBJECT: Insect Evaluation

TO: Forest Supervisor, Plumas NF

While on the forest, John Pierce was contacted by the LaPorte District and requested to help with some problems related to salvage logging. Pierce met with Ranger Johnson and some of his staff to fly the district and make ground examinations on May 25, 1979.

From the air it is apparent that considerable opportunities for salvage remain. The main concentration of tree mortality seems to have shifted from the South Fork drainage to the Middle Fork.

Tree markers are reporting increasing incidence of red turpentine beetle attacks and were unsure how to respond to this condition. To investigate this, 4 trees with fresh turpentine beetle attacks were felled for futher examination. Two trees were discovered to also be under mass attack by the western pine beetle much higher up on the bole. The 2 other felled trees had not been attacked by the western pine beetle; at least not yet.

While trees attacked by the turpentine beetle need not automatically be selected for salvage, such trees should be carefully inspected for western pine beetle attacks higher in the tree. Questionable trees should occasionally be cut for further examinationand guidance. Since new western pine beetle attacks are now beginning, some green, hard to recognize, infested trees are accumulating in the forest. If these are sought out while salvage loggers are at hand, greater timber value and beetle suppression can be achieved by rapid salvage efforts.

WILFRED L. FREEMAN, JR.

WILFRED L. FREEMAN, JR., Director
Forest Insect and Disease Management

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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

R-5

REPLY TO: 3430 FIDM Evaluation

June 19, 1979

SUBJECT: Polk Springs Biological Evaluation Update (Rare II, Area No. 5097)

TO: Forest Supervisor, Lassen NF

On Wednesday, June 13, 1979 Mike Srago, Pathologist and Bruce Roettgering, Entomologist, FIDM Staff and Norm Pettigrew, Salvage Sales Office, Almanor District made an evaluation of the current status and predicted trend in tree mortality in the Polk Springs area (Rare II, Area No. 5097).

Evaluation

Using vantage points along the eastern edge of Deer Creek drainage, observations were made of the relative numbers of older dead trees (faded in spring and summer of 1978), recently dead trees (faded in fall and winter of 1978) and current dead trees (fading in spring of 1979). These observations showed that the level of tree mortality (ponderosa pine, sugar pine and Douglas-fir) was high in the spring and summer of 1978 and that this mortality frequently occurred as large groups of trees. The level of mortality dropped by fall of 1978 with the dead trees occurring in smaller groups and as individuals. A further drop in the number of dying trees is apparent this spring with only scattered individual fading trees visible. The complete picture of total spring mortality however, is likely only to be apparent in mid-July as tree fading continues.

This drop in tree mortality can be associated with the continuing recovery of vigor by the trees and forest from the prolonged and severe drought of 1975-1977. The winter and spring rains of 1978 were well above normal; precipitation during the same period in 1979 was near normal. Subjective measures of the recovery of vigor readily apparent now are the excellent 1978 needle length and 1978 internodal growth on all species of conifers. In both cases -- needle and internodal -- this growth is from two to four times greater than that of 1977.

No western pine beetle infested ponderosa pine were found; but two trees showing good evidence of having successfully pitched ant attacking beetles were seen. A few green Douglas-fir with declining crowns were found to have patch and/or strip attacks by the fir flatheaded borer. Quite likely the beetles will remain active in trees like these causing further decline and, ultimately, death. A few sugar pine with well faded foliage were checked. While some mountain pine beetle and California flatheaded borer broods were present, the numerous round and oval exit holes in the bark indicated that substantial emergence had already taken place. Woodpecker activity in all species of trees judged to have harbored overwintering beetle broods was rated as moderate to heavy.

The wood in the recent and older dead trees still is quite sound with only minimal deterioration due to decay, wood destroying insects and weather checking.

Discussion

It appears that the peak of tree mortality in the Polk Springs area was reached in the spring and summer of 1978. All indications now are that the forest is recovering from the drought -- the principal underlying cause for the excessive tree death -- and that tree mortality there will continue to drop in 1979. It should not be expected that tree mortality will stop completely, however. Most of the sites supporting trees at Polk Springs are marginal; many of these sites are overstocked; and at least one debilitating disease -- dwarf mistletoes in ponderosa pine -- is present. Given these conditions, bark beetles and various other cambium dwelling insects can be expected to exploit opportunities for breeding in and consequently, killing trees.

It is apparent that the drought and subsequent pest-associated tree mortality has severely altered the nature of the Polk Springs Area from its 1975 or pre-drought character. While deferring salvage (recovery of dead and dying trees) will not pose a bark beetle threat to the adjoining unconstrained areas, the magnitude of the existing mortality is such that considerable timber value will be lost unless recovered by the end of this operating season. Left unsalvaged, the massive build-up in fuel load could pose an immediate and long term threat to the commercial timber stands, Private and Forest Service, adjacent to the roadless area.

If salvage logging is carried out in the Polk Springs Area, some additional short-term damage associated with the operations is to be expected. However, that damage may be minimized if helicopters are used to do the yarding.

If you have any questions concerning this evaluation or if we can be of any further assistance please contact me at (415) 556-6520.

WILFRED L. FREEMAN, JR.

WILFRED L. FREEMAN, JR., Director
Forest Insect and Disease Management

cc: W.O.
Director, TM

BRoettgering/cr